

Endoscopic plantar fasciotomy in the treatment of chronic heel pain

Edwin P. Urovitz, MD; Alexandra Birk-Urovitz; Elizabeth Birk-Urovitz

Objective: To evaluate endoscopic plantar fasciotomy for the treatment of recalcitrant heel pain. **Method:** We undertook a retrospective study of the use of endoscopic plantar fasciotomy in the treatment of chronic heel pain that was unresponsive to conservative treatment. Over a 10-year period, we reviewed the charts of 55 patients with a minimum 12-month history of heel pain that failed to respond to standard nonoperative methods and had undergone the procedure described. All patients were clinically reviewed and completed a questionnaire based on the American Orthopaedic Foot and Ankle Society (AOFAS) score for ankle and hindfoot. **Results:** The mean follow-up was 18 months. The mean preoperative AOFAS score was 66.5; the mean postoperative AOFAS score was 88.2. The mean preoperative pain score was 18.6; the mean postoperative pain score was 31.1. Complications were minimal (2 superficial wound infections). Overall, results were favourable in over 80% of patients. **Conclusion:** We conclude that endoscopic plantar fasciotomy is a reasonable option in the treatment of chronic heel pain that fails to respond to a trial of conservative treatment.

Objectif : Évaluer la fasciotomie plantaire par endoscopie pour traiter une douleur récalcitrante au talon. **Méthode :** Nous avons effectué une étude rétrospective de l'utilisation de la fasciotomie plantaire par endoscopie pour traiter une douleur chronique au talon ne répondant pas à un traitement conservateur. Nous avons étudié sur une période de 10 ans les dossiers de 55 patients qui avaient depuis au moins 12 mois une douleur au talon ne répondant pas aux méthodes non opératoires habituelles et qui avaient subi l'intervention décrite. Tous les patients ont subi un examen clinique et ont rempli un questionnaire fondé sur l'échelle de l'American Orthopaedic Foot and Ankle Society (AOFAS) pour la cheville et l'arrière-pied. **Résultats :** Le suivi moyen s'est établi à 18 mois. Le score moyen de l'AOFAS était de 66,5 avant l'opération et de 88,2 après. Le score moyen de la douleur était de 18,6 avant l'opération et de 31,1 après. Les complications ont été minimales (deux cas d'infection d'une plaie superficielle). Dans l'ensemble, les résultats ont été favorables chez plus de 80 % des patients. **Conclusion :** Nous concluons que la fasciotomie plantaire par endoscopie est une option raisonnable pour traiter la douleur chronique au talon qui ne répond pas à une tentative de traitement conservateur.

Heel pain is one of the most common symptoms for which patients are seen in orthopedic practice. Most heel pain patients present with pain originating about the plantar calcaneal tuberosity and are diagnosed with plantar fasciitis or heel spur syndrome. Conservative forms of treatment, including nonsteroidal anti-inflammatory drugs, heel pads or orthotics, physical therapy, extracorporeal shockwave therapy and corticosteroid injections, provide substantial relief to about 80% of patients.

For those individuals who do not respond adequately, endoscopic plantar fasciotomy may provide a reasonable surgical alternative.¹

Notwithstanding rare causes such as primary bone tumours, stress fractures or sepsis, most cases of chronic heel pain arise from biomechanical or inflammatory causes. Excessive subtalar and/or midtarsal pronation places increased tensile stresses on the origin of the plantar fascia and short intrinsics, resulting in periostitis that, in turn, can lead to a calcaneal spur.

Obesity and pes cavus may also lead to abnormal forces being generated, ultimately leading to microtears. The abnormalities may result in chronic inflammatory reactions that manifest as pain. Additionally, various forms of seropositive and seronegative arthropathies may present with heel pain as a common symptom (rheumatoid arthritis, Reiter syndrome, ankylosing spondylitis, etc).²

The patient presents with a history of inferior heel pain most commonly noted on arising from bed.

From Malvern Medical Arts, Scarborough, Ont.

Accepted for publication Feb. 22, 2007

Correspondence to: Dr. E.P. Urovitz, Malvern Medical Arts Bldg., 325-1333 Neilson Rd., Scarborough ON M1B 4Y9; urovitz@sympatico.ca

The first few steps are often the most painful, and there may be a reduction of pain as the day proceeds. Restart-up pain, burning and referred pain patterns to the calf are not uncommon.

Physical examination will usually reveal tenderness of the medial plantar tuberosity, which may be enhanced by dorsiflexing the toes with the foot held at 90° to the leg. There may be coexisting excessive pronation or cavus deformity. Radiographic examinations are usually normal or may show a spur. One study revealed a 13% incidence of heel spurs in a random sample of 1000 radiographs, of which about one-third were symptomatic.³ Bone scans are useful for corroborating clinical complaints and are usually positive in blood phase and delayed phase images.⁴

Recent magnetic resonance imaging (MRI) studies in chronic heel pain have suggested that T_1 -weighted images demonstrate thickening of the plantar fascia and T_2 -weighted images show subcutaneous edema and focal thickening of the plantar aponeurosis.⁵

The purpose of our study was to evaluate endoscopic plantar fasciotomy in the treatment of chronic heel pain by undertaking a retrospective review. In our study, patients underwent a 12-month trial of non-operative care before surgery was offered. In general, no more than 5%

of patients with this condition will require a surgical option.

The procedure is optimally performed under general or regional anesthesia. The patient is supine. I prefer a small (1–1.5 cm) horizontal incision placed about 1–1.5 fingerbreadths above the distal heel skin and about 1 fingerbreadth behind the posterior border of the medial malleolus (Fig. 1). Blunt dissection is performed just to the level of the medial edge of the investing fascia. A path is cleared by using a curved elevator just distal to the plantar fascia extending from the medial to the lateral border. A slotted cannula is introduced in this plane until the blunt edge of the cannula can be palpated, impinging on the lateral skin of the heel. A skin incision is made to allow the cannula to exit laterally. An arthroscope is then introduced from medial to lateral side, allowing visualization of the entire plantar fascia. A hook knife is introduced through the lateral opening of the slotted cannula, and the plantar fascia is divided by pulling the knife from the medial to the lateral side while keeping the blade under direct vision at all times. Usually 2 or more passes are required. I try to divide the medial two-thirds of the fascia rather than doing a full release. The incisions are closed with 1 or 2 sutures, and soft padded dressings are applied. Patients are allowed weight-bearing as tolerated with a soft running shoe worn for the first 2 weeks after surgery.

Methods

Between August 1995 and October 2005, 55 patients (35 women and 20 men; mean age 38 y, range 25–72 y) were treated by endoscopic plantar fasciotomy. They were assessed personally in the clinic and surveyed with a questionnaire based on the American Orthopaedic Foot and Ankle Society (AOFAS) score for ankle and hindfoot.⁶ These patients had the procedure done bilaterally. The mean follow-up was 18 months. All patients had tried nonsteroidal anti-

inflammatory drugs (NSAIDs) preoperatively. All but 2 had tried physical therapy, 90% had undergone at least a single corticosteroid injection, and 85% had tried orthotics.

Results

The mean preoperative AOFAS score was 66.5, and the mean postoperative score was 88.2. The mean preoperative pain score was 18.6, and the mean postoperative pain score was 31.1. These differences were statistically significant ($p = 0.01$). Of the 55 patients, 10 felt that there was no improvement overall, and of these, 2 had undergone bilateral procedures. There were only 2 complications — both being superficial wound infections that resolved completely after 7 days of oral cloxacillin. We noted no postoperative foot deformities or major changes in the arches of those who had surgery.

Conclusion

A retrospective review of endoscopic plantar fasciotomy suggests that this may be a reasonable method of treating recalcitrant heel pain that is unresponsive to a reasonable trial of conservative treatment. The procedure is not a panacea, with favourable results being present in about 82%. However, complications are minimal to date, with no cases of metatarsalgia, paresthesiae or reflex sympathetic dystrophy. The advantages of endoscopic as opposed to open release include shorter operative and tourniquet time, quicker return to normal footwear, immediate weight-bearing and less risk of operative complications. One study found that the main advantage of endoscopic release over traditional open release was the reduction in mean time returning to work or to full activity.⁷ In our experience to date, this procedure should be reserved for patients with persisting, disabling heel pain who have been provided with a minimum of 12 months of conservative treatment.



FIG. 1. The incision starts at the confluence of a vertical line about 1 fingerbreadth behind the posterior border of the medial malleolus and a horizontal line about 1–1.5 fingerbreadths above in the inferior edge of the heel (x).

Competing interests: None declared.

Contributors: Dr. Urovitz designed the study, analyzed the data, wrote and reviewed the article. Mses. Birk-Urovitz acquired the data and reviewed the article. All authors gave final approval for the article to be published.

References

1. Barrett SL, Day S, Endoscopic plantar fasciotomy V. Two portal endoscopic surgical techniques — clinical results of 65 procedures. *J Foot Ankle Surg* 1993;32:248-56.
2. Davis JB, Blair HC. Spurs of the calcaneus in Strumpell-Marie disease: report of 15 cases. *J Bone Joint Surg Am* 1950;32:838-40.
3. Shama SS, Kominsky SJ, Lemont H. Prevalence of non-painful heel spur and its relation to postural foot position. *J Am Podiatry Assoc* 1983;73:122-3.
4. Intenzo CM, Wapner KL, Park CH, et al. Evolution of plantar fasciitis by three-phase scintigraphy. *Clin Nucl Med* 1991;16:325-8.
5. Berkowitz JF, Kier R, Rudicel S. Plantar fasciitis: MR imaging. *Radiology* 1991;179:665-7.
6. Kitaoka HB, Alexander IJ, Adelaar RS, et al. Clinical rating system for the ankle-hindfoot, midfoot, hallux and lesser toes. *Foot Ankle Int* 1994;15:7349-53.
7. Tomczak RL, Haverstock B. A retrospective comparison of endoscopic plantar fasciotomy to open plantar fasciotomy with heel spur resection for chronic plantar fasciitis heel spur syndrome. *J Foot Ankle Surg* 1995;34:305-11.

Canadian Journal
of **Surgery**

Journal canadien
de **chirurgie**

Change of address

We require 6 to 8 weeks' notice to ensure uninterrupted service. Please send your current mailing label, new address and the effective date of change to:

CMA Member Service Centre

1867 Alta Vista Dr.
Ottawa ON K1G 5W8

tel 888 855-2555 or
613 731-8610 x2307
fax 613 236-8864
cmamsc@cma.ca

Changement d'adresse

Il nous faut de 6 à 8 semaines d'avis afin de vous assurer une livraison ininterrompue. Veuillez faire parvenir votre étiquette d'adresse actuelle, votre nouvelle adresse et la date de la prise d'effet du changement, à l'attention du

Centre des services aux membres de l'AMC

1867, prom. Alta Vista
Ottawa ON K1G 5W8

tél 888 855-2555 ou
613 731-8610 x2307
fax 613 236-8864
cmamsc@cma.ca

ASSOCIATION
MÉDICALE
CANADIENNE



CANADIAN
MEDICAL
ASSOCIATION